

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of determining a position of a mobile communication device in a mobile communication network including a plurality of base stations, comprising the steps of:

dividing an area covered by the mobile communication network into a plurality of grids and collecting a first base station signal information with respect to each of the divided grids;

storing and maintaining the collected first base station signal information in association with a first position information of the grids in a database;

determining a second position information by a predetermined second position determination method;

measuring a second base station signal information received by a first mobile communication device with respect to the second position information;

updating the first base station signal information stored in the database based on the measured second base station signal information;

measuring a ~~second~~ third base station signal information received by the a second mobile communication device;

comparing the ~~second~~ third base station signal information with the first base station signal information to find first position information corresponding to the ~~second~~ first base station signal information in the database; and

generating final position information of the second mobile communication device based on the first position information found in the database.

2. (Original) The method of claim 1, wherein the first base station signal information includes at least one of pseudo-random noise phase, pseudo-random noise offset, pseudo-random noise phase delay, and pseudo-random noise strength.

3. (Currently Amended) The method of claim 1, wherein the grids are three-dimensionally divided, the first position information includes altitude information, and the first base station signal information varies with the altitude information.

4. (Original) The method of claim 3, wherein the altitude information is determined based on relative phase difference of the pseudo-random noise offsets with respect to the plurality of base stations.

5. (Cancelled)

6. (Currently Amended) The method of claim 5~~1~~, wherein the second position determination method is performed by a GPS receiving device.

7. (Currently Amended) The method of claim 5~~1~~, wherein the updated first base station information (a') is determined according to $a' = w * a + (1 - w) * b$ (a: first base station information, b: third base station information, and $0 < w < 1$).

8. (Original) The method of claim 1, wherein the grids are divided according to the inside and outside of a building and a story of the building.

9. (Currently Amended) The method of claim 1, wherein the grids are corresponding to each building and the first position information includes identification information of the buildings.

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Currently Amended) A method of determining a position of a building to

which a mobile communication device belongs, comprising the steps of:

collecting first base station signal information with respect to each building;

storing and maintaining the collected first base station signal information in
association with a first identification information of the buildings in a pattern matching
database;

determining a second position information by a predetermined second position
determination method;

measuring a second base station signal information received by a first mobile
communication device with respect to the second identification information;

updating the first base station signal information stored in the pattern matching
database based on the measured second base station signal information;

measuring a ~~second~~ third base station signal information received by the a
second mobile communication device;

searching the pattern matching database by the ~~second~~ third base station signal
information to find a base station set similar to the ~~second~~ third base station signal
information; and

determining a position of a building corresponding to the found base station set
as the position of the building to which the second mobile communication device
belongs in the case the property of the ~~second~~ third base station signal information is

corresponding to a predetermined property range of the found base station set.

14. (Original) The method of claim 13, wherein the predetermined property range of the base station set includes a pseudo-random noise phase delay range and a pseudo-random noise strength range.

15. (Original) The method of claim 14, wherein:

the pseudo-random noise phase delay range is determined within a predetermined range including a minimum value and a maximum value of the pseudo-random noise phase delays of base stations in the base station set, and

the pseudo-random noise strength is determined within a predetermined range including a minimum value and a maximum value of the pseudo-random noise strengths of base stations in the base station set.

16. (Currently Amended) The method of claim 13, wherein ~~the pattern matching database is updated by newly collected base station signal information and~~ the updated first base station signal information (a') is determined according to $a' = w * a + (1 - w) * b$ (a: ~~existing~~ first base station information, b: ~~newly collected~~ second base station information, and w is a weight more than 0 and less than 1).

17. (Cancelled)

18. (Previously Presented) A computer readable recording medium in which a program for executing the method of claim 1 is recorded.